

Vegetation and Range Condition

Based on the Geographic Information System (GIS) and Rocky Mountain Resource Information System (RMRIS) databases, the Jicarilla Wild Horse Territory contains the following vegetation types:

Table 6. Vegetation Composition Within the Jicarilla Wild Horse Territory

Vegetation Type	Acres	Percent
Grass/sagebrush	7,714	10
Shrubs	3,395	5
Piñon-juniper	50,031	67
Ponderosa pine	12,590	17
Mixed conifer	662	1
Total	74,392	100

There are five major types of vegetation in the JWHT – grass/sagebrush, shrubs, piñon/juniper, ponderosa pine and mixed conifer. Riparian is a very minor component. Figure 6 displays the distribution of vegetation across the territory.

Forest Plan Management Areas 11 and 12: Revegetation areas (grasslands) and sagebrush comprise 7,597 acres of the wild horse territory and occur along canyon bottoms in deeper, more productive soils. Sagebrush is associated with rabbitbrush, four-wing saltbush, shadscale and some grasses (blue grama and western wheatgrass). The key grazing areas throughout the JWHT are located in the grass/sagebrush habitat type. Roughly 3,000 acres of these units have been burned and approximately 2,000 acres have been reseeded. The reseeded acres were sown with crested wheatgrass, pubescent wheatgrass, perennial ryegrass, and ladak and black medic alfalfa. Areas reseeded were cleared through burning sagebrush or crushing piñon and juniper trees. Burned areas were primarily in American, Cabrero, and Cabresto canyons. Piñon-juniper crushed areas are on Bancos, Quintana, and Martinez mesas.

In past years, these reseeded areas have dramatically increased available forage for grazing, producing from 1200-3500 lbs of forage per acre. [26a] Reinvasion of sagebrush, decline of reseeded grasses, severe drought, and heavy grazing use have combined to reduce production on these sites. In the fall of 2003, monitoring found that forage production ranged from 215 pounds per acre to less than 50 pounds. [273] Productivity is highly variable from year to year, however, overall there has been a decline in production between 50 and 75 percent or more on these sites. These are important key grazing areas for cattle during the summer months, elk during the winter, and horses year-round.

Forest Plan Management Area 13: A mountain shrub community (3,395 acres/4%) made up of Gambel oak, mountain mahogany, bitterbrush, serviceberry, cliff fendlerbush and snowberry dominate the steep, north-facing slopes. Various sedges and grasses are associated with these browse species. Grasses consist mostly of muttongrass, bluegrass, junegrass and piñon ricegrass. Piñon-juniper, ponderosa pine, Douglas-fir, chokecherry, skunkbush and big sagebrush are also found scattered through this vegetation type. Deer and elk use this habitat type intensively for winter forage.

Vegetation Cover Types Jicarilla Wild Horse Territory

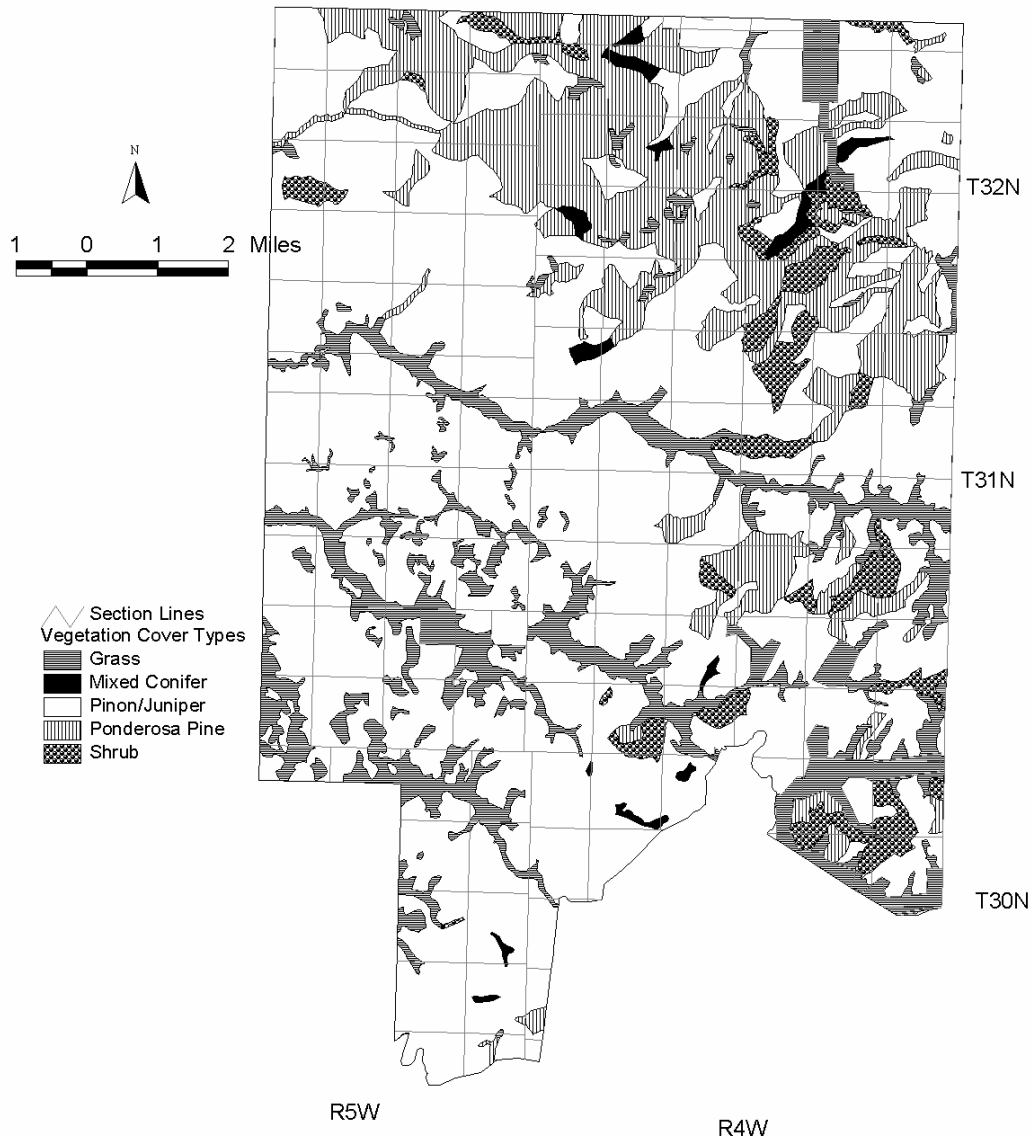


Figure 6. Vegetation Within Jicarilla the Wild Horse Territory

Forest Management Area 4: Ponderosa pine under 40 percent slope (12,590 ac/17%), is found in the higher elevations on ridges, north-facing slopes and head-canyons. Ponderosa pine is often associated with piñon-juniper in this area. Shrub species include Gambel oak, mountain mahogany and antelope bitterbrush. The pine understory consists of some sagebrush, sedges, blue grama and mutton bluegrass. This vegetation type is found primarily on the Carracas Allotment portion of the JWHT. It is an important browsing and grazing area for deer and elk. Horses also use it extensively as summer range.

Forest Management Area 8: Piñon pine and Rocky Mountain juniper (PJ), make up the majority of the area within the JWHT (49,782 acres). Gambel oak, sagebrush, and bitterbrush are the primary browse species. Western wheatgrass, blue grama, and galleta make up most of the perennial grass understory. Cattle, horses, elk, and deer extensively utilize these areas. The primary limiting factor for grazing use by cattle, horses, and elk is the lack of water on a large portion of the management area.

Mixed conifer is made up of Douglas-fir and ponderosa pine and is found at the highest elevations, on north-facing slopes and in small canyons. The area is small (662 acres), and is not separated into a Forest management area. The primary contribution for this vegetation type is hiding cover and habitat for wildlife. The majority of this habitat is scattered throughout the west part of the Carracas Allotment.

Riparian areas are estimated to be less than 30 acres of the JWHT. These are primarily scattered subirrigated areas, seeps, or sumps, in the canyon bottoms of Bancos, Eul, Cabresto, and Carracas canyons. A sump is a hole, generally about the size of a small dirt tank, dug with heavy equipment down to the water table. Included in these acres are sub-irrigated areas in the bottom of Bancos Canyon that have small willow thickets, and small areas dominated by inland salt grass. There is no running water in these sub-irrigated bottoms. A mix of coyote willow, Gooding's willow, peachleaf willow, and Fremont cottonwood are found in some of these areas. Other vegetation associated with this habitat includes sedges, rushes, blue grama, rubber rabbitbrush, big sagebrush, squirreltail, and dropseed species. These are all ephemeral streams and riparian vegetation is limited to small areas primarily in subirrigated canyon bottoms or where a seep is present.

Grazing Allotments

There are three grazing allotments associated with the JWHT -- Carracas, Bancos and Cabresto. Forty-four percent (31,918 acres) of the JWHT lies within the Carracas Allotment, however livestock use is limited to the Carracas Canyon area. The allotment is managed as a seasonal cow/calf operation through a 10-year term grazing permit and a temporary use permit -- 8 head are permitted under the term permit and another 4 head are under a temporary permit. The Carracas uses a one-pasture grazing system and grazing is permitted from May 16 to October 15. Livestock grazes approximately 5,000 acres (15%) of the 31,918 acres on the Carracas allotment.

Twenty-one percent, (15,399 acres) of the JWHT lies within the Bancos Allotment, excluding private land. The allotment is managed as a seasonal cow/calf operation with 80 head through a 10-year term grazing permit. The Bancos uses a four-pasture rest/rotation grazing system and grazing is permitted from May 16 to October 31.

Thirty-five percent (27,079 acres) of the JWHT lies within Cabresto Allotment. The allotment has a seasonal cow/calf operation with 101 head through a 10-year term grazing permit. The Cabresto uses a one-pasture grazing system and grazing is permitted from June 1 to October 31. Prior to 1955, the Carracas, Cabresto and Bancos allotments were one allotment, called the Carracas Allotment.

Existing Range Condition and Trend

Since the 1930's, Forest Service range conservationists and technicians have periodically measured changes in plant composition, vigor and diversity, as well as soil characteristics. These components are the key indicators of range condition. The condition rating is an estimate of how the current vegetation and soil community compares with its capabilities.

Grazing by wildlife, wild horses and livestock may impact vegetation by changing the mix of species in the plant communities being grazed; by changing the density and frequency of perennial forage plants; and by impacting the vigor of the grazed plants. These three vegetation effects are combined into five range condition classes (excellent, good, fair, poor, very poor), which reflect the relative effects of grazing on vegetation. In addition to range condition classes, range trend demonstrates whether range conditions are improving or declining.

Range trend expresses the direction of change (if any) in range condition in response to past and existing wild horse and livestock management practices or other land use activities, in combination with other environmental factors (FSH 2209.21 CH 40.5-2). [39] A stable trend means soil is held in place by vegetation, forage species are all aged, and reproducing vegetation cover is being maintained. A stable trend also indicates the mix of species is being maintained, as well as density and frequency of perennial forage plants and plant vigor. It is important to note that range condition on a downward trend may not necessarily be "bad". For example: the encroachment of sagebrush and juniper trees may indicate a downward trend in grass species that benefit livestock. However, the new vegetation type may provide hiding cover and browse for wildlife. A downward trend does indicate a reduction in forage availability for horses, cattle and wildlife that benefit from grasses and forbs, which may reduce the grazing capacity on grazing allotments and the JWHT.

Table 7. Range Transect History: Range Condition and Trend [26a, 260a]

Allotment	Location	Site	1954-56	1975	2003
Bancos	Lynch Ranch	reseeded 1973 sagebrush	poor/up	good/up	poor/stable
Bancos	Mule Canyon	reseeded 1973 sagebrush	not available	excellent/up	fair/stable
Bancos	Buzzard Park	piñon-juniper, ponderosa pine	poor/stable	fair/up	poor/stable
Bancos	Cabresto Canyon	reseeded 1973 sagebrush	not available	excellent/up	poor/down
Cabresto	Cabresto Canyon	sagebrush canyon bottom	poor/stable	fair/up	poor/down
Cabresto	Bancos Canyon	piñon-juniper, sagebrush	poor/stable	fair/up	poor/down
Carracas	Lower Carracas Mesa	piñon-juniper, ponderosa pine	poor/stable	poor/up	poor/down
Carracas	Upper Carracas Mesa	pine/meadow	not available	poor/down	poor/down

TES map unit 70/71 is the primary grazing soil type throughout the JWHT and where most key grazing areas are located. Consequently the majority of range transect information is gathered within this unit. In the fall of 2003, range conditions and trend information was gathered using Parker 3 Step methodology on 8 sites within the JWHT. [39, 26a] Six of these sites were located in TES map unit 70/71. Transect information is presented in Table 7. In 2003, transects located in the Cabresto Canyon area, (Lion and Cabrero canyons) were in poor range condition with downward trends. Only one transect was located in Bancos Canyon and it was also rated in poor range condition with stable trends. Other transects in Buzzard and the Lynch Ranch area were in poor condition with stable trends. Poor condition is considered unsatisfactory range condition. Only transects in Mule Canyon were in fair condition with stable trends which is considered satis-

factory. Both transects on the Carracas Mesa showed poor range conditions with downward trends. These are located in TES unit 174.



Figure 7. Range transect in Cabresto Canyon taken September 1973, two years after chaining and reseeding primarily with crested wheat.



Figure 8. Range transect taken in same location as previous photo in fall 2003. The site is invaded with sagebrush and the seeded species are only a remnant.



Figure 9. Plot photo in Cabresto Canyon on the Bancos Allotment taken in fall 1973.



Figure 10. Same plot photo as previous figure taken in fall 2003.



Figure 11. Range transect photo from fall 1973 in Cabresto Canyon on the Cabresto Allotment.



Figure 12. Same photo location as previous figure. Transect data indicates a decline in range condition from fair with and upward trend in 1973 to poor with a downward trend in 2003.



Figure 13. Range Transect Photo from fall 1973. Reseeding in the Lynch Ranch area on the Bancos Allotment.



Figure 14. Photo taken in same location as previous figure in fall 2003. The site is invaded with sagebrush and the seeded species are only a remnant.



Figure 15. Range transect photo in fall 1973 in Bancos Canyon on the Cabresto Allotment.



Figure 16. Same photo location as previous figure. Transect data indicates a decline in range condition from fair with and upward trend in 1973 to poor condition with a downward trend in 2003. Notice the difference in grazing use. This is an area currently being grazed hard by horses. Even the sagebrush is heavily browsed.



Figure 17. Range transect plot photo taken fall 1973 in Bancos Canyon on the Cabresto Allotment. Notice the western wheatgrass seedlings in the plot.

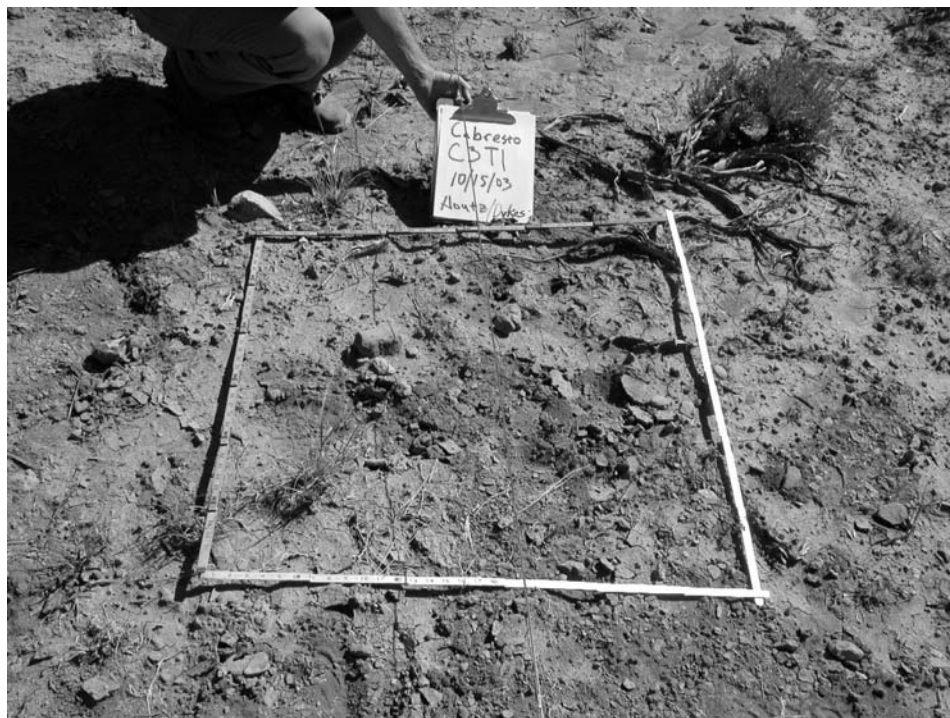


Figure 18 Same photo location as previous figure. The comparison of the two plots look similar, however the absence of the western wheatgrass in this photo is an important indicator of a downward trend.

It is apparent that range conditions in the primary grazing areas on the JWHT are in poor condition. This includes areas on the Carracas Allotment where cattle grazing is limited or non-existent.

Table 8. 1975 Combined Range Analysis for the Bancos, Cabresto and Carracas Allotments on the JWHT. [26a]

Range Condition	Sagebrush/Grassland	Steep Slopes Shrubland	Mixed Conifer/Ponderosa Pine	Piñon-Juniper Woodland	Total Acres	% of JWHT
Excellent	--	--	--	--	--	--
Good	1,409	--	--	--	1,409	2
Fair	1,159	828	2,739	1,843	6,569	9
Poor	5,984	573	11,559	35,850	53,966	72
Very Poor	395	--	--	12,053	12,448	17
Total	8,947	1,401	14,298	49,746	74,392	100

The last year when range conditions were mapped on the JWHT was in 1975. While this data is 30 years old, range conditions have not improved, based on range transect data from 2003 as shown in Table 8 and documented range inspections. [3, 42, 50, 165, 179, 246, 26a, 260a]

In 1975, the piñon-juniper woodlands and mixed conifer/ponderosa pine vegetation types by far had the majority of the poor and very poor range conditions. While some of these poor conditions could have been attributed to heavy grazing use by horses, cattle and wildlife, the majority was associated with increases in tree canopy and a loss of herbaceous vegetation. These are also the current conditions. As fire has been excluded from the ecosystem over the last 100 years piñon pine, ponderosa pine and a variety of juniper trees have increased in density. Over the last 30 years, tree canopy cover of these woodland sites has increased and little change could be expected without large blocks of trees being thinned, mechanically treated or burned with prescribed fire. While changes in grazing management may help up to 10 percent of these acres, most would not improve without major reductions in tree overstory.

The 1,409 acres shown in good condition in Table 8 and pictured in Figures 2 and 8 were seeded to crested wheat and chained to clear the sagebrush. It is natural for non-native species such as crested wheat to decline over time and for sagebrush to reestablish in areas where it was removed by chaining or other means. The primary concern at this time is that the sites cannot even be rated in fair range condition. Lost forage production on these reseeded sites also have major implications on grazing capacity on the JWHT.

From the standpoint of wild horse management, the sagebrush/grassland vegetation type is the most important. While there are pockets of this type in most of the TES units, the largest portion falls within TES unit 71/70, with some in units 119, 145 and 174. This is where management of grazing animals can have the greatest impact on unsatisfactory range conditions. By improving these acres, grazing on steeper slopes and in less accessible areas would also improve.

Forage Production and Utilization

Forage production is the amount of biomass plants can produce. Utilization of vegetation by grazing animals affects vegetation composition and productivity. Utilization is defined as the percentage of the current year's herbage production consumed or destroyed by herbivores. Overutilization can cause some plants to decline in frequency and distribution and to lose vigor and sustainability. Maximum allowable use is the amount of use key species can sustain without physiological damage.

The allowable level of utilization for range forage is estimated after considering numerous factors, such as the threshold for physiological damage for the plant species, intensity of management, type and class of livestock, conflicts with other range uses, capability of the land to produce forage, season of use, and conflicts with watershed and soil conditions. The Region-wide Forest Plan amendment issued June 5, 1996 [23] for the management of Mexican spotted owl and northern goshawk habitat includes additional standards and guidelines for grazing management on the Carson National Forest. It states, "Forage use by grazing ungulates will be maintained at or above a condition which assures recovery and continued existence of threatened and endangered species." [23]

The amendment guidelines describe how to identify key forage monitoring areas and to develop site-specific forage use levels. An allowable use guide is included in the amendment. The allowable use for all ungulates on the Jicarilla Wild Horse Territory is 30 percent. This level is what would be required to produce an upward trend in range condition for the territory (*Considerations Concerning Stocking Rates* Appendix C). Depending on the intensity and duration of grazing use, the speed of recovery from over-utilization may vary.

Cattle, horse and wildlife tend to concentrate grazing where water and forage are present. Wild horses are likely to range farther from water and use rougher ground than cattle. However, on the JWHT during the winter months the horses are apt to concentrate use in open sagebrush bottoms at lower elevations and then a portion of the herd will move up to higher elevations on Carracas Mesa during the summer. In past years, livestock grazed the same open bottoms during the summer months. These factors tend to lead to overgrazing in the bottoms and near ponds and springs, with less grazing on mesa tops and steeper slopes. The majority of key grazing areas fall within these canyons bottoms. Such patterns are especially apparent on the Cabresto, Carracas and Bancos canyons, where horses and livestock are concentrated. Except for 12 head of cattle on the Carracas allotment, the allotments in the JWHT have been in non-use since 2002 because of the poor range conditions and increasing horse numbers.

Table 9. Actual Cattle Grazing Use Over the Past 20 Years on Allotments Within JWHT

Year	Bancos	Cabresto	Carracas
Permitted Use	80	101	12
Actual Use			
2004	0	0	0
2003	0	0	0
2002	0	0	12
2001	50	51	8
2000	45	101	12
1999	45	101	12
1998	45	71	12
1997	50	70	12
1996	50	70	12
1995	50	101	12
1994	50	101	12
1993	45	85	12
1992	71	85	8
1991	36	56	8
1989	27	0	8
1988	59	0	8

Year	Bancos	Cabresto	Carracas
1987	62	0	8
1986	67	101	8
1985	67	101	8
1984	63	68	8

Wild horse reductions - A Wild Horse Management Plan was implemented in 1976 to manage a wild horse population of 60 head within the JWHT. [27, 28] Since 1977 horses numbers have fluctuated between 242 in 1978 and 53 in 1990 (Table 15). Currently there are estimated to be 232 horses, not including the 2004 foal crop.

Prescribed burning - To stimulate palatable browse and grass forage for wildlife, livestock and wild horses, over 3,000 acres on the Carracas Mesa and 1,500 acres in the Cabresto Allotment have been prescribed burned and portions reseeded in the last 10 to 15 years. These included: 3,420 acres in 1998 in Carracas, Cottonwood and Cedro canyons; 890 acres in 1993 in Salto and Bancos canyons; 60 acres in 1992 in Bancos Canyon; and 200 acres in 1991 in Turkey Canyon, for a total of 4,570 acres in 10 years. Many of these are the key grazing areas for ungulates. Because of four years of drought, most of these areas are in fair to poor condition, with a few sites now reverting to cheatgrass, big sagebrush and rubber rabbitbrush.

Oil and gas development – Areas that are cleared for well pads and pipeline rights-of-way are reseeded and provide forage for grazing ungulates. They began exploring and drilling in the 1940s, but did no site restoration at that time. Beginning in the 1970s, pads, pipelines, roads and other bare soil areas were seeded with grasses and forbs, resulting in some vegetation cover. Unfortunately many of these reseeded areas have received very heavy grazing use during the drought conditions over the last 5 years. Reseeding done on recently disturbed areas have either succumbed to the drought or received enough grazing pressure that they have not been successful.

Grazing Capacity

Vegetation condition and trend and expected utilization rates are used to estimate productivity. Estimated productivity for domestic livestock and wild horse grazing is expressed as grazing capacity. Grazing capacity is the available production for wild horses and livestock within the allowable use - over and above what is used by grazing wildlife.

The methodology prescribed in *Considerations Concerning Stocking Rates* (Appendix C) developed and currently utilized on the Apache-Sitgreaves National Forest was used to estimate grazing capacity for the JWHT. This methodology combines vegetation typing and production information with Geographical Information System (GIS) data. Factors for slope and distance to water are combined with estimated ungulate use by species (Appendix C). This analysis included deer, elk, wild horses and cattle. Specific knowledge by resource staff was also integral in bringing this information together to create an estimated grazing capacity. For this analysis wildlife use is held constant for each alternative since the Forest Service does not control wildlife populations. Consequently, during years of extended drought, wildlife numbers do not decrease and use a much larger share of available forage.

One of the concerns brought forward by the public during scoping for the Jicarilla wild horse proposal was the request to accurately explain which species is the cause for heavy grazing use and poor range conditions on the JWHT. The assumption is that livestock are the major culprit. Livestock grazing is a major concern, however, for many years only 12 head of cattle have grazed the Carracas Allotment, roughly 44 percent of the JWHT. Carracas Mesa has never lent itself well to livestock grazing; consequently it has had only limited cattle use. On that portion of the

JWHT, range conditions associated with key grazing areas are in poor and even very poor range condition. Carracas Mesa receives extensive grazing use in the fall and winter by elk and deer and then heavy grazing use in the summer by wild horses. The meadows and parks are thick with weedy annuals such as sunflower, curlycup gumweed, showy golden eye, and cheatgrass.

In April 2002, a field tour was held to inspect the Bancos Allotment. Cattle had not been on the allotment since October. Even this early in the season grazing use was already from 50-70 percent of the current years growth. "The obvious problem is utilization by wild horses. There is some wildlife use, but it does not appear to be significant. This conclusion was reinforced when we proceeded to monitor conditions on the Laguna Seca Allotment. There is no wild horse use on that allotment and current year's utilization is probably less than 5 percent. The elk and deer populations are no different from that on the Bancos Allotment." [147]

A portion of Bancos Canyon lies within the Cabresto Allotment. It is difficult for cattle to get into Bancos Canyon; consequently it receives considerably lighter grazing use from cattle. However, it receives heavy use from horses. During the January 2004 horse survey flight, 58 horses were counted in Bancos Canyon, 20 in Carracas Canyon, and 80 in Cabresto Canyon. There have been inferences in the scoping for this project that horses do not use the canyon bottoms and if they do it is only light use. This is simply not the case. Over the last three years there have been only 12 head of cattle on the JWHT and yet grazing use has continued to be well over 50 percent in the key grazing areas. They can and do use steeper slopes than cattle, but they will spend much of their time grazing valley bottoms if given the opportunity. Personnel on the Jicarilla Ranger District have come to know many of the individual horses on the territory, because their bands are routinely seen in the same canyon bottoms where the major Forest roads are located. [272a, 273, 165, 179]



Figure 19. Typical opening on Carracas Mesa, which receives heavy grazing use from horses. The site is dominated by annuals. In the background is a large stand of sunflowers.

Table 10. Comparison of Grazing Use (Animal Unit Months) By Cattle and Wild Horses 1994-2004.

Year	Cattle	Wild Horse	Total
2004	0	2,784	2,760
2003	0	2,616	2,616
2002	103	2,316	2,419
2001	902	1,884	2,786
2000	1,289	1,428	2,717
1999	1,284	1,116	2,400
1998	971	No data	--
1997	1,086	1,680	2,766
1996	1,086	No data	--
1995	1,332	No data	--
1994	1,332	1044	2,376

An animal unit month (AUM) is the forage needed for one cow for one month. A cow calf pair is considered 1.32 AUMs. 1 AUM was used for horses. The 1976 Wild Horse Management Plan called for managing the herd at an average of 60 animals. That would be 720 AUMs of grazing. If wild horse numbers had been kept closer to 60 head, range and soil conditions on the JWHT would still need attention, but would not be as serious as they are at the present time.

Comparison of Alternatives

Table 11 shows the expected forage utilization over the entire JWHT for each alternative. The expected utilization is from cattle, horses, elk and deer.

Table 11. Comparison of Estimated Utilization on the JWHT By Alternative

Alternative	A No Action	B	C Proposed Action	D
Estimated Utilization Under Favorable moisture and Improving Range conditions	* 30-50% and increasing until a die off occurs	20-30%	20-30%	20-30%
Estimated Utilization Under Drought Conditions	* 60-80% and increasing until a die off occurs	20-30%	20-30%	30-50%

* With the high herd numbers associated with Alternative A, there would be serious potential for 25 – 50% die off of the horse herd as occurred during the hard winter of 1978.

As indicated in Table 11, Alternative A would allow for soil and range conditions to continue degrading throughout the JWHT. Alternative D would not facilitate improvements in range and soil conditions during drought years. With the flexibility to adapt wild horse numbers to available forage, alternatives B and C would have the greatest potential for improving range and soil conditions.

Table 12 displays forage production and forage available for grazing by alternative. The available forage is 17 percent of what is produced. Appendix C describes the methodology for assessing forage availability based on distance to water and slope. Combined elk and deer grazing use is held constant for each alternative.

Table 12. Estimated Annual Forage Production (lbs.) and Allocation

	Total Annual Forage Production	Forage Available for Grazing	Forage Allocated to Elk and Deer	Forage Available to Wild Horses and Cattle
Estimate Under Favorable Moisture and Improving Range Conditions	10,538,810	1,842,471	612,850	1,229,621
Estimate Under Drought Conditions	5,289,801	924,950	612,850	312,100

Table 13. Estimated Capacity For Each Alternative

	Wild Horses	Cattle	Elk	Deer
Alternative A	300+ year-round	0	325 wintering 81 summering	700 wintering 175 summering
Alternative B Favorable moisture and Improving Range conditions	112 year-round	140 summer	325 wintering 81 summering	700 wintering 175 summering
Alternative B Drought	20 year-round	46 summer	325 wintering 81 summering	700 wintering 175 summering
Alternative C Favorable moisture and Improving Range conditions	105 year-round	140 summer	325 wintering 81 summering	700 wintering 175 summering
Alternative C Drought	50 year-round	14 summer	325 wintering 81 summering	700 wintering 175 summering
Alternative D Favorable moisture and Improving Range conditions	150 year-round	116 summer	325 wintering 81 summering	700 wintering 175 summering
Alternative D Drought	100 year-round	no cattle	325 Wintering 81 summering	700 wintering 175 summering

Past, Present, and Reasonably Foreseeable Activities

The past, present and reasonably foreseeable activities that will be used to analyze the cumulative effects on vegetation are: Livestock and wildlife grazing, natural gas development, and pine bark beetle infestations.

Alternative A

Even with favorable weather conditions, range conditions would rapidly decline as the wild horse population continues to climb. Grazing use would exceed the 30 percent use levels needed to improve poor range conditions ranging from 60-90 percent. Heavy grazing use would cause current poor range conditions to move toward very poor. Acres of poor range condition in sage/grassland bottom sites would continue to increase. It is expected that within the next 5 years all 7,514 acres of sage/grassland bottom sites would be in poor or very poor range condition. Poor range conditions on slopes with piñon and juniper would be expected to double to 8,000 acres in the same time frame as heavy grazing use climbs up slope, while the valley bottoms continue to decline in productivity. Soil loss from gullying, rilling, and overland flow would persist, reducing long-term productivity of the soil and limiting the future potential for site stability recovery. Reseeding on gas related pipeline and well locations within the JWHT would continue to fail also -- increasing the acres in unsatisfactory condition. The herd population would increase until a die off of horses occurred -- most likely in connection with a hard winter.

Cumulative Effects

Effects described above include the cumulative effects of livestock and wildlife along with the impacts of horses on vegetation. Effects of natural gas development and production would actually reduce the available forage since revegetation efforts on the JWHT would be seriously hampered (see also Gas Development section). The effects of pine bark beetle infestations could increase available forage as stands of piñon and ponderosa die.

Alternative B

Alternative B would decrease grazing use to 30 percent available forage, providing flexibility for managing wild horse and livestock numbers and improving range conditions. Increases in vegetation biomass retained on site and returned nutrients to the soil would help stabilize current erosion rates, particularly on steeper piñon and juniper sites adjacent to valley bottoms. Reseeding success on gas related pipeline and well locations would dramatically improve with decreased grazing pressure, also reducing acres in unsatisfactory condition. Overall poor range conditions associated with grazing would be expected to improve to fair range condition with stable trends over 10 percent of the acres within the next 10-year period. It is likely that some areas in poor or very poor range conditions would not positively respond to less grazing pressure. In these areas, reseeded coupled with restricted grazing may be necessary to increase herbaceous ground cover to achieve fair range conditions with stable trends.

Cumulative Effects

Effects described above include the cumulative effects of livestock and wildlife along with the impacts of horses on vegetation. Effects of natural gas development and production would maintain available forage as revegetation success improved with a smaller horse herd on the JWHT. The effects of pine bark beetle infestations could increase available forage as stands of piñon and ponderosa die.

Alternative C

Like Alternative B, Alternative C would decrease grazing use to 30 percent of available forage. Flexibility in the management of wild horse and livestock numbers would result in an improvement of range conditions. Increases in vegetation biomass retained on site and returned nutrients to the soil will help stabilize current erosion rates, particularly steeper piñon and juniper sites adjacent to valley bottoms. Reseeding success on gas related pipeline and well locations would dramatically improve with decreased grazing pressure, also reducing acres in unsatisfactory condition. Overall poor range conditions associated with grazing would be expected to improve to fair range condition with stable trends over 10 percent of the acres within the next 10-year period. It is likely that some areas in poor range condition would not positively respond to less grazing pressure. In these areas, reseeded coupled with restricted grazing may be necessary to increase herbaceous ground cover to achieve fair range conditions with stable trends.

Cumulative Effects

Effects described above include the cumulative effects of livestock and wildlife along with the impacts of horses on vegetation. Effects of natural gas development and production would maintain available forage as revegetation success improved with a smaller horse herd on the JWHT. The effects of pine bark beetle infestations could increase available forage as stands of piñon and ponderosa die.

Alternative D

Alternative D would decrease grazing use to 30 percent of available forage during non-drought years and would incorporate some flexibility in managing wild horse and livestock numbers, thus improving soil conditions. During drought periods, it is expected that grazing use would climb well above the 30 percent use level, thus slowing improvement in range conditions. During periods of extended drought, range conditions would not improve and could potentially decline. Depending on drought conditions, upgrading range conditions to fair range conditions with stable trends could be 5 percent or as little as zero over the next 10-year period. It is likely that some areas in poor range conditions would not positively respond to less grazing pressure. In these

areas reseeding coupled with restricted grazing may be necessary to increase herbaceous ground cover to achieve fair range conditions with stable trends.

Cumulative Effects

Effects described above include the cumulative effects of livestock and wildlife along with the impacts of horses on vegetation. Effects of natural gas development and production would maintain available forage as revegetation success improved with a smaller horse herd on the JWHT.

The effects of pine bark beetle infestations could increase available forage as stands of piñon and ponderosa die.